SUBCONTRACTORS IN GLOBAL VALUE CHAINS: A TYPOLOGICAL THEORY AND EMPLOYMENT SYSTEMS FRAMEWORK

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

by

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January 2009

ABSTRACT

In this thesis, I argue that there are different types of first-tier subcontractors and that distinct employment systems will be seen at each of these subcontractor types. I identify four subcontractor "ideal types" in the form of a typology- Economic, Agile, Turn-key and Client-Specific Subcontractors- differing on their degree of specialization, customization and value chain governance. I argue that each of these subcontractors will have different sources of competitive advantage and modes of operation and that their recruitment & selection, skills & training, work design and appraisal & rewards will therefore be organized quite differently. I present some preliminary empirical evidence from Infosys Technologies Ltd., Infosys BPO and Infosys Consulting Inc. in order to empirically specify my "ideal types" and check the validity of my hypothesized employment systems framework.

BIOGRAPHICAL SKETCH

Aruna was born in the hot South Indian city of Chennai, but was whisked away to even hotter Saudi Arabia when she was just two months old. After many adventures in Riyadh, Dubai, Chennai, New Delhi and Singapore, she finally landed up in beautiful Vancouver for her undergraduate degree in Commerce from the University of British Columbia. After getting her MS from the School of Industrial and Labor Relations at Cornell University, she will head to MIT to start her Phd in Management.

To my parents, who have always encouraged me to reach for the stars

ACKNOWLEDGMENTS

Completing this thesis would have been impossible without the valuable assistance of my committee chair and advisor, Professor Sarosh Kuruvilla. I am very grateful for his generous support and his rapid responses to queries and proposals over email. I know that I could not have pursued this thesis topic, nor completed it in a timely fashion, had it not been for his guidance. Professor Kuruvilla was patient with my preliminary, rough ideas, and he constantly pushed me to strive towards better quality work. I am also very grateful to him for providing me with the opportunity to work on his research projects.

I am also much indebted to my committee member, Professor Rose Batt. She has been a great source of support right from the time I entered Cornell, and she has always made herself available to help me in any way possible.

In the summer of 2007, I spent four weeks doing fieldwork at Infosys in Bangalore and Mysore, which gave me data that inspired this paper. So I would also like to extend my gratitude to Infosys for being a committed and accommodating host and for making my first fieldwork experience fun.

Finally, I am very glad to have met Venkat and the rest of the TBC at Cornell. Life in Ithaca has been a blast, and I owe this to them!

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The Global Value Chain (GVC) framework analyzes the organization of global industries in network or chain form (Gereffi 1994). The community of GVC scholars (see www.globalvaluechain.org) has developed common parameters for defining different types of value chains and a "taxonomy of value chains that can be operationalized through a robust set of indicators" (Gereffi, Humphrey, Kaplinsky and Sturgeon 2001:3). A key actor in most value chains is the first-tier subcontractor (also called first-tier supplier), defined as the first point of contact for the lead firm in the value chain. To be clear, the lead firm is the firm at the head of the chain that provides a product or service to the public. In the last decade there has been a plethora of research examining the characteristics of first-tier subcontractors and the nature of lead firm-subcontractor relationships within a number of geographic and commercial contexts (Ford, 1998; Lamming, 1994; Sako, 1992, 1999; Hines, 1996; Lang-fieldSmith and Greenwood, 1998; Correa and Miranda, 1998; Spekman et al, 1998). The traditional view that has dominated the manufacturing sector is that first-tier subcontractors deliver discrete components to lead firms and in doing so manage that part of the supply chain that provides services and parts for its product (Doran 2003). While this is still the case in many situations, some first-tier subcontractors are adding new competencies to take on additional functions and are thereby increasing their leverage in their respective value chains (Bair 2005).

In this paper, my first goal is to develop a typology of first-tier subcontractors, as there appears to be a gap between the common perception of subcontractors and

their actual nature (Doran 2003). To be clear, typologies refer to "conceptually derived interrelated sets of ideal types" which can be subject to rigorous empirical testing (Doty and Glick 1994: 232). I define and flesh out four distinct types of first-tier subcontractors- Economic, Agile, Turn-key and Client-Specific Subcontractors- and argue that each of them will be sustainable in their own way. Specifically, I contend that these subcontractor types will differ inherently in their level of specialization, level of customization and value chain governance structure (which I call "first-order constructs") and will therefore have different sources of competitive advantage, strategies and modes of operation.

Next, I work out employment systems at each of the first-tier subcontractor types that I define in my typology. I hypothesize that since the subcontractor types are distinct configurations of the first-order constructs and operate quite differently from one another, they will each have unique employment systems in line with their specific characteristics. In particular, I argue that the subcontractor types will differ in their recruitment and selection, skills and training, work design and appraisal and rewards. This paper will be the first attempt to study employment amongst subcontractors in global value chains. As Coe and Hess (2006:16) in their review of the GVC and global production networks literatures acknowledge, "the labor process within the firm is rarely explored in relation to the dynamics of value creation and enhancement…in literatures that appear more concerned with firm strategies and upgrading positions". Smith et al. (2002:47) also argue that "little, if any, attention is given to the organization of work and employment at the intra-firm level, clearly limiting an assessment of a firm's location within a commodity chain". The focus thus far has been on labor as a passive victim in the restructuring of global production networks ("cheap" labor), which has given rise to scholarly work on labor standards,

monitoring, corporate codes of conduct etc. (Locke, Qin and Brause 2006), the upgrading of work conditions (Nadvi 2004) and the position of trade unions within global value chains (Cumbers, Nativel and Routledge 2008), but there has been little attention paid to the organization of employment internally.

In the next section, I present a selective literature review of the GVC and employment literatures to provide some context to my argument. In section 3, I shall elaborate on my typology of first-tier subcontractors, paying special attention to the chosen first-order constructs and ideal types. In section 4, I describe hypothetical employment systems for each of my subcontractor types. Subsequently, in section 5, I provide some preliminary empirical evidence for my argument.

CHAPTER 2

LITERATURE REVIEW

2.1 GLOBAL VALUE CHAINS

The global value chain (GVC) approach arose out of the global commodity chain (GCC) framework, which was first proposed by Gary Gereffi in 1994. Gereffi defined GCCs as sets of inter-firm networks connecting manufacturers and suppliers in global industries to each other and ultimately, to international markets. The GCC approach emphasizes that commodities are produced through the coordination of production units across borders, with each unit performing a distinct function within the wider process. Tracing the path of a commodity provides a grounded way to study and operationalize the "global-local" nexus and thus, the GCC literature has been dominated by empirically rich case studies of international production networks in different sectors of today's global economy (see Humphrey 2000, Sturgeon 1997, Barnes and Kaplinsky 2000, Gereffi 1999, Schmitz and Knorringa 2000 for a sample of case studies).

In defining GCCs, Gereffi identified four dimensions with respect to which every chain can be analyzed 1) an input-output structure (the process of transforming raw materials into final products), 2) territoriality (or geographical scope), 3) a governance structure (nature of power relations that exist along the chain), and 4) an institutional context (Gereffi 1994). Studies of existing GCCs have focused primarily on the governance dimension- that is, the question of which firms in the chain are most able to control various aspects of the production process and how they

appropriate and/or distribute the value that is created (Coe and Hess 2006). Therefore, special attention has been paid to the most powerful or lead firms in an industry because of their influence over other chain participants and their presumed position as potential agents of upgrading and development. However, scholars have devoted less attention to the conceptualization of value in the input-output structure of chains and the way in which value is appropriated among the actors linked together in a sequence of production activities (Foster 2005). But before this can be done in a meaningful way, we need to have a clear understanding of each actor type, their capabilities, role and leverage in their respective chains. Lead firms have already been theorized in Gereffi's dichotomy identifying producer-driven commodity chains (where powerful manufacturers control and often own several tiers of vertically-organized suppliers) and buyer-driven commodity chains (where designers and retailers that market but don't necessarily make products sold under their label dictate chain activities). I attempt to do the same at the level of the first-tier subcontractor and in this way, hope to contribute to our conceptualization of input-output structures in production chains.

The newer GVC perspective represents a more inclusive approach to the study of international production networks than that provided by the GCC framework as it attempts to engage in more rigorous theory (not just case studies), and encompasses a wider set of industries, including those in the service sector. What it borrows from the GCC literature is the quest to understand how global industries are organized, but GVC scholars strive to get past the lead firm bias by "identifying the full set of actors (firms) that are involved in the production and distribution of a particular good or service and mapping all the kinds of relationships that exist among them" (Coe and Hess 2006: 2). Like GCC analysis, one of the main concerns of GVC scholars is to investigate the governance structures in different global industries, but in addition

attempts are made to delineate the varying governance structures both within, and between, different sectors in terms of varying knowledge characteristics (Dolan and Humphrey 2004, Gereffi et al 2005).

The most widely accepted theory of value chain governance has been proposed by Gereffi, Humphrey and Sturgeon (2005). In their article, the authors develop a typology of five governance structures (hierarchical, captive, relational, modular and market) that describe the network relationships linking suppliers in global industries to lead firms. This typology is based on the possible combinations resulting from variations (measured as low or high) in three independent variables: the complexity of transactions, the codifiability of information and the capability of suppliers. The value chain theory of governance suggests that relationships between lead firms and suppliers differ across chains due to the particular characteristics of the production process and the organization of the chain, such as the sophistication and availability of the technology involved, the existence or absence of (technical and process) standards, and the extent to which rapid turnaround time or speed to market is essential to competitiveness. The goal is to explain variation in terms of how global production is organized and managed, focusing on the key role of transaction costs.

The theory predicts that when product and process specifications are relatively simple to communicate, transactions are easily codified, and suppliers have the capability to make products with little input from buyers, market governance can be expected. Where suppliers are competent, and information can be codified, then even complex information can be handled through what is termed modular value chains. In this case "technical standards simplify interactions by reducing component variation and by unifying component, product, and process descriptors" and, when "suppliers

are able to supply full packages and modules, this reduces a buyer's need for direct monitoring and control" (Gereffi et al, 2002, page 17). In the case "when product specifications cannot be codified, products are complex, and supplier capabilities are high, relational value chain governance can be expected. This is because tacit knowledge must be exchanged between buyers and sellers, and because highly competent suppliers provide a strong motivation for lead firms to outsource to gain access to complementary competencies" (Gereffi et al, 2002, page 17). Captive value chain relationships arise when products are complex and product specifications are codifiable, but supplier capabilities are low in relation to buyer requirements. In this case, the buyer needs both to monitor supplier performance closely and possibly to invest in increasing supplier capabilities. In situations "when product specifications cannot be codified, products are complex, and highly competent suppliers cannot be found, then lead firms will be forced to develop and manufacture products in house" (Gereffi et al, 2002, page 18). This is the case of vertical integration.

Some empirical studies have also been critical to our understanding of supply relationships. Work on the electronics industry and contract manufacturing by Sturgeon (2002) and by Sturgeon and Lee (2001) has contrasted three types of supply relationships, based on the degree of standardization of product and process: (1) the 'commodity relationship' where subcontractors provide standard products through arm's length market relationships, (2) the 'captive relationship' where subcontractors make non-standard products using machinery dedicated to the buyer's needs, and (3) the 'turn-key relationship' where subcontractors produce customized products for buyers and use flexible machinery to pool capacity for different customers. This analysis emphasizes the complexity of information exchanged between firms and the degree of asset specificity in production equipment.

Another crucial empirical study (Sturgeon 2006) recognizes that subcontractors vary greatly with respect to the extent of customization that they provide in their deliverables. Initially, customized goods and services were considered to be non-tradable by economists or at least very sticky in a geographic sense. But as was the case with manufacturing 100 years ago and service provision off late, many aspects of work have begun to move from the realm of "craft production", where inputs and outputs are tailored and unique, into the realm of "mass production", where inputs and outputs are easily codified and produced with the heavy application of technology. Specifically, it is information technologies that have made the difference. This is allowing a growing range of customized tasks to be fragmented, codified, modularized, and more readily and cheaply transported between subcontractors, producers and consumers who might be at great distance. Thus, the application of information technology allows subcontractors to engage in varying degrees of customization in the provision of goods and services to their lead firms.

2.2 EMPLOYMENT SYSTEMS

'Employment systems' is an umbrella term that encompasses "(a) specific human resource practices; (b) formal human resource policies, which direct and partially constrain the development of specific practices; and (c) overarching human resource philosophies, which specify the value that informs an organization's policies and practices" (Jackson and Schuler 1995). Human resource practices, policies and philosophies within a given employment system tend to fit together with a coherent logic. Osterman (1987) developed a framework to understand variation in employment systems between firms. He suggested that four employment subsystems- industrial,

salaried, craft and secondary- captured most of the choices available to firms. Jacoby (1985) argued that the development of industrial internal labor markets in American manufacturing firms was impelled by the institutions of unionization and the growth of the personnel management function. This, he argues, instigated the replacement of the existing market-oriented, arbitrary and impermanent employment system by one that was more bureaucratic, rule-bound and secure. In this paper, I take a similar institutional perspective in developing a framework to understand variation in employment systems amongst first-tier subcontractors. I argue that specific subcontractor types can be matched to certain employment systems, and that this is governed by the specifics of the value chain in which the subcontractor operates.

CHAPTER 3

TYPOLOGY OF FIRST-TIER SUBCONTRACTORS

In the previous section, I reviewed the GVC literature and noted that the diversity amongst first-tier subcontractors has not yet been sufficiently explored. The only existing work in this area has been done by Doran (2003). He developed a continuum consisting of three levels of first-tier suppliers in the automotive sector and referred to them as "mature", "developing" and "fringe" first-tier suppliers (Doran 2003). He defined "mature" suppliers as those having the capacity and capabilities to supply (and in some cases, fit) modules on a global basis, "developing" suppliers as those positioning themselves to supply on a modular basis and "fringe" suppliers as those unlikely to survive as first-tier suppliers in a modular context.

However, a typology is more than a classification system as it doesn't "categorize phenomena into mutually exclusive and exhaustive sets with a series of discrete decision rules…[but instead] identifies multiple ideal-types, each of which represents a unique combination of the first-order constructs" (Doty and Glick 1994: 232). In this way, a typology has more theoretical value than a classification scheme. In this paper, I identify four ideal types of first-tier subcontractors, namely Economic, Agile, Turn-key and Client-Specific subcontractors. I argue that Economic subcontractors will compete on costs, Agile subcontractors will compete on nimbleness and speed in closely following client specifications, Turn-key subcontractors will leverage generalized technical assets to serve multiple customers with a relatively independent stance towards each customer made possible by high levels of competence, and Client-Specific subcontractors will leverage and empower

their multi-skilled, flexible workforce in providing high quality, exclusive services. Based on my literature review, I use the following first-order constructs- level of specialization, level of customization, and value chain governance – as the building blocks for my typology, as each of these concepts have been cited in the literature as being important in characterizing supply relationships. As I pointed out, the concept of 'governance' was developed by Gereffi, Humphrey and Sturgeon (2005), 'level of specialization' by Sturgeon and Lee's (2001) study of the electronics sector, and 'level of customization' by Sturgeon (2006) in his report on service offshoring. Let me now define each of these constructs:

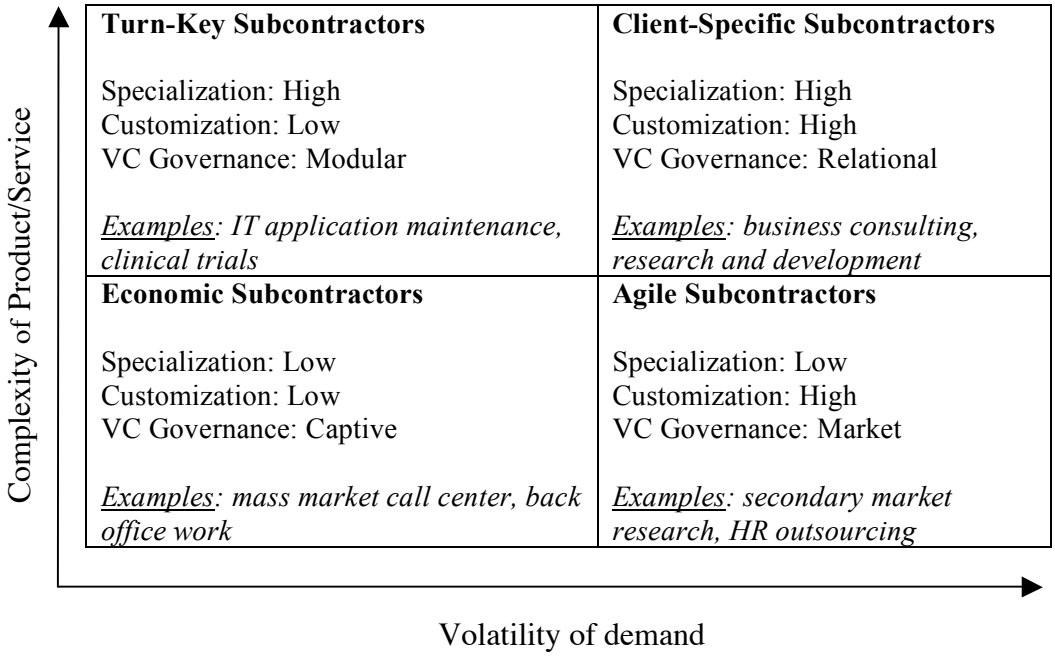
Level of Specialization: This is defined as the provision of knowledge-intensive services, which requires higher-level technical expertise. This is measured as low when the services can be provided well by individuals with only basic formal education and who lack depth of knowledge or dedicated skills, whereas this is measured as high when the services require experts who are comfortable applying their technical knowledge in providing the services.

Level of Customization: This is defined as a process by which subcontractors apply technology and management methods to provide service variety (in terms of specific service attributes) and tailoring of services to the specific needs of the customer through a focus on flexibility, quality and/or quick responsiveness. This is measured as low when services are standardized and/or service specifications can easily be codified without involved consultation with the clients. This is measured as high when subcontractors need to get inside the client to understand them and their needs well, before being able to provide services that meet their needs.

Value Chain Governance: This is defined as one of five types- hierarchy, captive, relational, modular and market- which range from high to low levels of explicit coordination and power asymmetry. Definitions of each of these types were provided in the literature review section.

As mentioned before, these first-order constructs are the dimensions used to describe each ideal-type in the typology and I have chosen the aforementioned four constructs such that there is "internal consistency among the first-order constraints within an ideal type" (Doty and Glick: 234). Each of these first-order constructs included in the typological theory are equally important. In Table 1 on the next page, I present my typology of ideal types indicating the particular configuration of the first-order constructs within each type. In any typology, it is useful to visually see where each ideal type lies with respect to the other ideal types. To facilitate this, I have presented my first-tier subcontractor typology as a four cell framework on a graph containing 'complexity of service' on the vertical axis and 'volatility of demand' on the horizontal axis. Actual distances on this graph are meaningless, but the goal is to qualitatively map the ideal types against each other. Here, 'complexity of service' and 'volatility of demand' are concepts that tie together all the first-order constructs and help understand what broadly changes in the movement from one ideal type to another.

Table 1: Typology of First-Tier Subcontractors



My typology also allows for hybridization among the ideal types. Hybrid types are combinations of the initial ideal types and are also posited to be profitable (Doty and Glick 1994). In this typology of subcontractors, hybrids can arise when subcontractors are moving up the value chain and are making the transition from one ideal type to another, or if the subcontractors are providing two or more starkly different services (as characterized by the first-order constructs) in order to reduce risk through diversification. Now let me describe the ideal types in more detail.

3.1 ECONOMIC SUBCONTRACTORS

I argue that these subcontractors will provide low specialization and low customization services to their clients at much lower costs than if these services were performed in-house in the clients' home countries. Clients are willing to subcontract these services as they are typically non-core activities. The services represent work

processes that were historically varied and complex, but have now become so mechanized and routinized that they don't require higher-level expertise or specialization. To a large extent, economic subcontractors will standardize their service across clients (i.e. low service variety) as they don't strive to compete on exceptional quality or responsiveness. The benefits for them include enormous economies of scale achieved through office consolidation and process rationalization. Thus their goal is solely to meet their clients' targets with as little expenditure as possible. To this end, economic subcontractors will be happy to get detailed instructions from their clients to help guide their operations and are seen in a captive value chain governance structure. As Gereffi, Humphrey and Sturgeon (2005) suggest, when the ability to codify - in the form of detailed instructions - is high but supplier capabilities are low, the value chain governance will tend towards the captive type. In captive value chains, power is exerted directly by lead firms on subcontractors, and with respect to economic subcontractors, I argue that this power will be characterized by a high degree of monitoring and squeezing in the form of cost minimization.

A good example of an economic subcontractor would be a mass market call center focusing on simple transactions like telemarketing, reservations or credit card handling. Such call centers represent a new industrial model driven by advances in information technologies that are now ubiquitous. These technologies facilitate the automation of services through interactive voice recognition units, standardized customer transactions through skill-based routing systems, machine-paced operations through automated call distribution systems and routinized work through widespread use of scripting (Batt, Doellgast and Kwon 2005). All these technologies allow call centers to focus on cost-minimization as their business model. Given the high level of standardization and automation in tasks performed, the capabilities of these call

centers are quite low and the lead firms tend to monitor their performance closely. Low service quality often prevails as self-service menus and mechanized systems limit choices for consumers. Other examples of services that could be performed by economic subcontractors are back office work and HR administration.

3.2 AGILE SUBCONTRACTORS

I argue that these subcontractors will engage in a mass customization business model, which "relates to the ability to provide customized products or services through flexible processes in high volumes and at reasonably low costs" (Da Silveira, Borenstein and Fogliatto 2001). These subcontractors will emerge when there is customer demand for variety and customization, and where individual parts of the final product or service can be bundled together in different forms to enable simpler and lower-cost provision of customized end-products. The implementation of advanced technologies is fundamental to the existence of agile subcontractors as it facilitates the bundling of basic, unspecialized individual units into highly customized products and services. One could argue that the very concept of mass customization appeared only after some companies were able to successfully integrate a series of information and process flexibility technologies. Main enabling technologies are communication and network technologies such as computer-aided design (CAD), computer-aided manufacturing (CAM), computer integrated manufacturing (CIM), and electronic data interchange (EDI), which provide direct knowledge links and integration between work-groups (e.g. design, analysis, manufacturing, and testing), and improve the response time to customer requirements.

Thus, I argue that agile subcontractors will be dynamic, low specialization, high customization actors and that their success will depend on their agility in translating new customer demands into new products and services. I further argue that agile subcontractors will be seen in market value chain governance structures. The value chain governance theory predicts that when product and process specifications are relatively simple to communicate, transactions are easily codified, and suppliers have the capability to make products with little input from buyers, market governance can be expected. I argue that agile subcontractors will give customers plenty of choice in low-specialization products and services, take full responsibility for process technology and have a wide customer base and will therefore fit the market governance form. They will elicit customer demands but then independently create a bundle of "pre-processed" individual units to speedily deliver the required product or service.

A good example of a service that an agile subcontractor would undertake is the outsourcing of market research. Outsourced market research is mostly in the form of secondary research undertaken before a client embarks on a new project. The research could be about the emerging and potential state of market conditions, including competitors, customers, channels, suppliers, and social and political interest groups (Srivastava, Shervani and Fahey 1998, p.5). The market research firm independently carries out basic research on these various topics. Then, when a client articulates their specific research requirements, the market research firm rapidly combines bits of this "pre-existing" research to create a report satisfying the client's needs. As can be seen, the work, in itself, is not complex but relies heavily on flexible internal processes within the market research firm to respond to clients in an agile fashion and also move smoothly between client demands with only peripheral involvement with each client.

Other services that could be provided by agile subcontractors include HRM services (outsourced by many MNCs), and operating business to business call centers.

3.3 TURN-KEY SUBCONTRACTORS

Many MNCs have combined a move to "modular" value chains with increased outsourcing, giving increased responsibility to first tier subcontractors (Sturgeon and Florida 2000). To meet the growing demand for full-service outsourcing solutions, I argue that this new breed of turn-key subcontractors will add entirely new knowledge-intensive competence areas, increase their scope of activities and improve delivery and cost performance. The products and services will all be provided to their customers in a ready-to-use form; "just turn the key". These subcontractors will focus on a "cross cutting sophisticated base service", one that is specialized and is also needed by a wide variety of end users rather than on processes or services that are idiosyncratic or highly customer specific. This way, they can build external scale economies when they have a wide range of customers, use generic process technology, focus on a functional specialty and take a full service approach to their specialty.

In this way, I argue that turn-key subcontractors will provide high specialization and low customization services using their highly skilled talent and generalized assets, allowing them to provide a full range of assistance with little dependence on their clients. Turn-key subcontractors will be part of "modular" value chain governance structures. There will be less frequent and intense interactions than in other networks, reduced interdependence and use of highly formalized inter-firm linkages, such as the transfer of digital design files from customer to supplier. As Gereffi, Humphrey and Sturgeon (2005) suggest, when suppliers are competent, and

information can be codified, then even complex information can be handled via modular value chains. Suppliers are able to supply full packages and modules, closely following technical standards, and this reduces a buyer's need for direct monitoring and control. In fact, as these subcontractors gain in financial strength, technical and operational expertise, and geographic reach, and as traditional MNCs become increasingly reliant on them, the possibility arises for them to take the further step of developing their own end-services (Teece 1996, Fine 1998). I argue that turn-key subcontractors can also embark on vertical integration (through mergers, acquisitions and joint ventures) and geographic expansion to gain the ability to provide their customers with modules on a global basis.

A good example is the subcontracting of IT application development. The number of firms that produce software or employ software developers include large banks, insurance companies, finance companies, and in fact, most large organizations end up producing, maintaining and enhancing a considerable amount of software. However all of this work can be digitized, is subject to well-developed technical standards and can be performed on standard platforms such as SAP and Oracle. Therefore, a fairly substantial fraction of these activities can be outsourced, and increasingly, carried out away from the lead firm. A modular value chain governance is appropriate as the IT subcontractors are highly competent, supply full-service solutions, operate independently without needing much intervention or guidance from the lead firms. The services they supply are specialized but don’t require client-specific knowledge as all project specifications can be easily codified. Other services outsourced to turn-key subcontractors include accounting and clinical trials in the pharmaceutical industry.

3.4 CLIENT-SPECIFIC SUBCONTRACTORS

I argue that client-specific subcontractors will engage in low-volume, high-quality exclusive services with limited clients rather than high-volume services. They will provide knowledge intensive services for which they will require multi-faceted technical expertise as well as general problem solving skills, and there will be a strong focus on quality and perfection. I argue that client-specific subcontractors will empower their employees to work closely with their assigned clients and get to understand them and their needs. The increased variety and customization of services means that the expectations of one client differ vastly from those of another. Thus these subcontractors will acquire significant firm-specific knowledge in the process and become invaluable to the lead firm.

In inter-firm relationships of this sort, I argue that we will see complex interactions between buyers and sellers, which often creates mutual dependence and high levels of asset specificity, leading to a relational governance structure. As Gereffi, Humphrey and Sturgeon (2005) suggest, when transactions are complex, and suppler capabilities are high, relational value chain governance can be expected. This is because tacit knowledge will be exchanged between lead firms and client-specific subcontractors and because highly competent subcontractors will provide a strong motivation for lead firms to outsource to gain access to complementary competencies. The mutual dependence that then arises is regulated through reputation and repeat transactions will be the norm. In relational value chains, the power balance between the firms is more symmetrical than captive value chains, given that both contribute key competencies.

A good example of a client-specific subcontractor would be a business consulting firm. The work involves understanding the business strategy and context (customers, competitors, suppliers etc.) of the client firm and then providing responsive, high-quality solutions to the business problem at hand. Thus, the consulting services need to be tailored to the unique needs of each client. Consultants need to have business acumen and expertise in multiple business fields in order to come up with practical and innovative business plans for the clients. In this business, the consultants are a key source of competitive advantage and the cost of losing any one consultant is high as they deal with clients directly and are responsible for building a good rapport with them in order to deliver the best possible consulting solutions. Consultants are highly skilled and the services they provide are complex but the client specifications are hard to codify and therefore, relational value chain governance dominates with low power asymmetry between the subcontractor and lead firm and the consultants acting as business partners to the lead firms. Other services that could be undertaken by client-specific subcontractors include financial portfolio management and R&D.

Thus, in this section of the paper, I first identified the first-order constructs that form the building blocks of my typology of first-tier subcontractors; I then developed my typology; and finally, I described each subcontractor ideal-type in detail with respect to the first order constructs and also, gave examples of services that fit into each ideal type. In the next section, I will discuss how employment is organized across Economic, Agile, Turn-key and Client-Specific subcontractors.

CHAPTER 4

EMPLOYMENT SYSTEMS AT FIRST-TIER SUBCONTRACTORS

In Section 2 of this paper (my literature review), I cited Jackson and Schuler's (1995) definition of employment systems as encompassing a) specific HR practices, b) HR policies and c) HR philosophies. I also outlined the institutional ILM approaches to organizing employment within firms. In this section, I constrain my attention to four specific HR practices that I consider as being the most critical in organizations, namely recruitment & selection, skills & training, work design and appraisal & rewards. I look at how these four HR practices vary across the first-tier subcontractor types identified in the previous section. I present this in Table 2 on the next page and then discuss the employment systems that prevail in each of the subcontractor types individually.

Table 2: Employment Systems at First-Tier Subcontractors

TURN-KEY Subcontractors Specialization: High Customization: Low VC Governance: Modular EXAMPLES: IT application maintenance, clinical trials --- ***Employment Systems*** Recruitment & Selection: college graduate with specialized degree, standardized testing to assess technical competence Skills & Training: functionally oriented, entry-level technical training, management training when promoted Work Design: project-based teams, relatively flat team structure with 2-3 levels of hierarchy and bulk of workers being entry-level specialists Appraisal & Rewards: based on team leader evaluation, includes base salary, individual and team bonus, promotion opportunities	**CLIENT-SPECIFIC Subcontractors** Specialization: High Customization: High VC Governance: Relational EXAMPLES: business consulting, research and development --- ***Employment Systems*** Recruitment & Selection: postgraduate/ doctorate degree and/or significant varied work experience, individual and group-based technical and personality testing Skills & Training: multi-skilled oriented, high breadth of understanding across functions and high knowledge depth some functions, continuous training in order to stay up-to-date and flexible Work Design: autonomous cross-functional teams Appraisal & Rewards: based on client feedback and ability to maintain relationship with client, includes base salary, large team bonuses
ECONOMIC Subcontractors Specialization: Low Customization: Low VC Governance: Captive EXAMPLES: mass market call center, back office work --- ***Employment Systems*** Recruitment & Selection: high school graduates, low barriers to entry during selection Skills & Training: project-specific, entry-level training in project domain and soft skills Work Design: individual with electronic surveillance and supervisors monitoring work Appraisal & Rewards: quantitative appraisal based on productivity, includes base salary, pay for individual performance	**AGILE Subcontractors** Specialization: Low Customization: High VC Governance: Market EXAMPLES: secondary market research, HR outsourcing --- ***Employment Systems*** Recruitment & Selection: university graduates of any background, selection though interview on the basis of aptitude for learning and flexibility Skills & Training: generalist oriented, problem solving and analytical skills, high breadth of understanding across functions to allow flexibility, low depth of knowledge, entry-level training in project domain and soft skills, continuous training for flexibility Work Design: highly flexible teams Appraisal & Rewards: based on client feedback, includes base salary, team bonus, advanced educational opportunities

4.1 ECONOMIC SUBCONTRACTORS

I argue that these subcontractors will face a high degree of monitoring and control from their clients (who are often big, global oligopolies) with respect to their employment systems. According to Aron and Liu (2005), the more work processes are codified and the higher the number of performance metrics agreed by the buyer and seller, the lower the operational risk. And since most of the clients of economic subcontractors will compete on costs, I argue that they will push their subcontractors towards a cost-based employment system. As I pointed out before, the deliverables here will be low specialization ones and therefore, the lead firms will outsource mainly to avoid paying the higher wages associated with these jobs in developed countries. Also, these deliverables will likely be non-core to the clients, which would make it hard for lead firms to justify any substantial investment in their subcontractors' employees.

I argue that for economic subcontractors, thresholds for selecting new employees will be low, with unspecialized work and low recruitment budgets, and so, even high school graduates will be acceptable. These employees will not be made to undergo any heavy-duty training either; they will only be equipped with the basic skills that they need to perform their day-to-day work. In other words, they will be trained to understand their project domain and equipped with soft skills. Technology will be used to mechanize and automate service provision where possible. In other words, technology will be viewed as a substitute for labor, with labor regarded as a residual cost to be minimized. Thus, I contend that the work design will be Tayloristic: individual-based with excessive surveillance and monitoring by supervisors and time and motion studies to standardize work. Taylorist work organization minimizes skill

requirements, discretion and job cycle time and so, learning will be limited to repetition of simple rationalized tasks - `practice makes perfect'. Thus the HR practices to induce effort will be built on fear of job loss and/or piece-rate pay systems (or, in call centers, individual commission pay). Finally, pay, too, will be highly correlated with individual employee productivity, which would be measured quantitatively through electronic surveillance systems.

4.2 AGILE SUBCONTRACTORS

For agile subcontractors, the goal of the employment system would be to help facilitate and maintain flexible internal processes in order to rapidly respond to client demands. Thus I argue that agile subcontractors will select employees based on their openness to flexibility. The employees will also be selected based on problem solving and analytical skills so that they can customize services as required. I argue that agile subcontractors will typically hire university graduates of any background and develop them into generalists, who have a basic understanding of all the functions performed by the subcontractor, even though they might lack depth of knowledge.

Under this employment system, the new employees will be provided with training in the project domain of their clients and in soft skills to facilitate their client interactions. Only then will these generalists be in a position to respond quickly to client demands and work closely with clients in meeting their expectations. In addition, agile subcontractors will provide plenty of opportunities for continuous learning to their employees so that they remain nimble and keep up with changes in market demands. They will potentially even be willing to sponsor advanced education opportunities as a form of reward, to upgrade their employees so that the

subcontracted deliverables they provide remain current and relevant to the lead firms in the industry verticals that they serve. This would be especially important since by definition, their competitive advantage rests on their ability to adapt. Since agile subcontractors essentially respond to needs of clients, I argue that employee appraisals will be heavily influenced by client feedback of their performance. For this reason, the employees will receive a standard base salary, but their bonuses will be contingent on their performance.

4.3 TURN-KEY SUBCONTRACTORS

These subcontractors are defined as being knowledge-intensive but low customization product/ service providers who have expertise that is valuable to a variety of clients. The key characteristic that differentiates these subcontractors from low specialization ones is that their work requires high levels of knowledge input in a non-routinized manner. Thus, I argue that turn-key subcontractors will hire college graduates with specialized degrees and also, engage in widescale standardized testing to ensure that their new hires are technically competent. If faced with skills shortages, these subcontractors might even hire semi-skilled workers and then provide entry-level technical training themselves.

As I argued previously, the knowledge-intensive deliverables provided by turn-key subcontractors will require sophisticated internal structures designed to maximize knowledge sharing (Swart, Kinnie and Purcell 2005). Therefore, I argue that the dominant form of work organization will be a project team, and knowledge workers will work as part of teams focusing on a specific client project. The teams will be relatively flat to respect the professional need for autonomy and self-directed

development amongst the highly skilled workers. In most employment situations, the management of these knowledge workers will be loosely structured with low degrees of monitoring and control. Good performance within these teams will be rewarded through promotions up the 2-3 levels of hierarchy within a project team, and eventually up to the senior management level. Managerial training will be provided for new managers who have never managed people before, or are in need to improve their effectiveness. Other rewards will also dependent on team leader evaluation. In other words, these subcontractors will adopt an internal development mode. This would be particularly useful in retaining highly skilled workers in the face of skills shortages.

4.4 CLIENT-SPECIFIC SUBCONTRACTORS

I argue that these subcontractors will organize their employment systems in the form of autonomous cross-functional teams. This decentralized and flexible organizational structure will then allow them to be more responsive to the needs of their clients. To achieve flexibility, these teams will have far-reaching, high degrees of competence, and team members will engage in a variety of tasks. The employees will be highly skilled themselves, usually possessing advanced degrees (Masters or Phds) and/or significant work experience. Not only this, they will usually have depth of knowledge in more than one functional area which will enable them to provide comprehensive solutions to their clients and will allow client-specific subcontractors to compete on superior quality. However, these employees will not be selected purely for their technical competence but also for their communication skills and their ability to work well in teams since work here will be organized in teams and there will be significant client interaction involved. Thus, I argue that multiple rounds of individual

and group-based testing for technical and soft skills will be the normal route to selection.

Firm sponsored entry-level training at client-specific subcontractors will be brief and will only seek to make new employees familiar with the breadth of the subcontractors' functions. However, wage premiums will provide incentives for workers to engage in continuous training, in order to retain flexibility in the midst of changing markets. I argue that client-specific subcontractors will also tie employee rewards to group performance, which will be assessed on the basis of client feedback about their satisfaction with the subcontracted products and services. This would be strategic since, as argued before, client-specific subcontractors are part of relational value chains and would like to maintain their relationships with their clients long into the future. In comparison with Tayloristic work organization and assembly line techniques, the use of teams here will be expected to increase efficiency and result in superior quality and the performance appraisal will only seek to validate this.

Thus, in this section I have specifically looked at the employment systems within different first-tier subcontractor types to show that they are quite different. I have argued that Economic subcontractors will hire low skilled workers to perform standardized work, Agile subcontractors will hire college graduates and develop them into flexible generalists in responding to client demands, Turn-key subcontractors will hire graduates with specialized knowledge to work on full package service solutions and Client-Specific subcontractors will hire highly qualified, multi-skilled workers with advanced degrees to provide customized, high quality services. I have specified that while Economic subcontractors will organize work individually, Turn-key subcontractors will use project-based teams, Client-Specific subcontractors will

employ cross-functional teams and Agile subcontractors will use highly flexible teams. I have argued that all the subcontractor types will have an element of performance-based compensation, though this will increase with the level of adaptability demanded of the workforce, and that the flavor of the rewards will also depend on the focus and the competitive advantage of the subcontractor type. In all, through this analysis I have suggested that subcontractors with varying capabilities, degrees of leverage within their chains and labor market conditions will organize employment quite differently. In this way, I emphasize that it is important to study firms within the context of their value chains as the role that the firms play in their respective value chains is influential in determining the employment systems that will prevail internally, at least at the subcontractor level.

CHAPTER 5

EMPIRICAL EVIDENCE

In this paper I have presented a typology of first-tier subcontractor ideal types that are configurations of four chosen first-order constructs. However, typologies are complex theoretical statements that should be subjected to quantitative modeling and rigorous empirical testing. The perfect methodology to test my argument would be to translate my verbal model into a quantitative model and then carry out statistical tests based on one or more equations that model key assertions of the theory (Doty and Glick 1994). In order for this to work, the quantitative model needs to be an accurate translation of the verbal theory and must capture the similarity of real organizations to one or more of the ideal types or else the empirical test will not be valid (Venkatraman 1989).

In this quantitative mode of testing, ideal types need to be defined by specifying multivariate profiles that represent the ideal types of organizations identified in the theory. These "ideal profiles" are multivariate models of the ideal types that provide the translation between the verbal descriptions of the ideal types in the theory and the operational measures used to assess real organizations on the first-order constructs (Doty and Glick 1994). The method of specifying ideal types that is most consistent with the logical structure of typological theories is theoretical specification. Theoretical specification requires expert raters (or the original theorists) to develop the ideal profiles that represent the ideal types of organizations (Doty et al., 1993; Segev, 1989). These raters base their judgment strictly on their interpretation of the theory. The expert raters determine the value of each relevant first-order construct

that best describes each ideal type of organization. The mean of the values assigned by the expert raters to each construct for the ideal types constitutes the ideal profile for the corresponding ideal type. Then the similarity of real organizations to ideal types of organizations can be modeled as "profile similarity". Techniques for assessing profile similarity are well documented and involve assessing deviation of real organization from ideal type with some form of the weighted Euclidean distance formula (Cronbach and Gleser 1953, Miller 1978). Finally, explanations are sought to justify the deviations or else the theory is falsified.

Another alternative is for ideal types to be modeled using empirically specified ideal profiles. In this method of specification, organizations that closely resemble the ideal types of organizations described in the theory are independently identified. These organizations can be identified via a qualitative assessment by researchers. This is what I have attempted to do in this paper. However, my goal was not just to find empirical ideal profiles for the identified first-tier subcontractor types- ie. Economic, Agile, Turn-key and Client-Specific subcontractors- in value chains, but also to be able to understand the employment systems at each of my empirically specified ideal profiles in order to check if they match what I outlined in Section 4 of this paper.

During the course of my previous work on the outsourcing industry, I came across some well-known, new, first-tier subcontractors from developing countries that have been growing organically and through smaller deals. Specifically, the Indian trio of Wipro, Infosys and Tata Consultancy Services (TCS) have built an IT outsourcing industry that has moved upmarket, has gone global and is chasing rich-country leaders such as Accenture and IBM (Economist 2008). Further, these Indian subcontractors

have diversified their operations beyond IT and moved into areas as diverse as business processes outsourcing, consulting, research and development and education.

Infosys is particularly interesting in the context of value chains because of its innovative Global Delivery Model (GDM), using which it conducts work both at offshore development centers (ODCs) and proximity development centers (PDCs). Infosys' GDM is based on the principle of "doing work where it makes the most economic sense, with the least amount of acceptable risk and optimum cost" (Nagabhushan 2004). The GDM provides clearly defined process guidelines emphasizing the importance of information flow and communication. Under the GDM framework, project execution has two components: offsite and onsite. The offsite component is carried out at a remote location and includes activities that need to be scaled and/or don't need constant interaction with the client. On the other hand, the onsite component refers to work executed at the customer site and covers activities that need end-user interaction, proximity to the market, quick turnaround time etc. The GDM has helped Infosys to intelligently allocate work and integrate onsite and offsite work for efficient and lower-cost completion of projects. Since its inception in 1981, Infosys has not only grown in terms of volumes but has also enhanced its offerings, i.e. the company has seen sturdy growth in those services that are at the higher end of the software value chain. Infosys had further leveraged the power of GDM into new and value-added services such as Business Process Management (BPM), Package Implementation (PI), Systems Integration (SI) and IT & business consulting. In this way, Infosys stands for the new, mature first-tier subcontractor that understands its capabilities and roles in the various value chains in which it operates.

For this reason, I chose to spend 4 weeks from mid-June to mid-July 2007 "hanging out" at Infosys' headquarters in Bangalore, India. During this period, I conducted 26 interviews, all in an unstructured format averaging about 1 hour (though some took as much as half a day or a whole day when I shadowed employees around), and had many more informal conversations with employees and interns. The people interviewed included HR managers, members of the Academic Relations team, Corporate Planning executives, consultants, software engineers, call center workers and interns. I followed a snowball sampling method where initial interviewees led me to other people whom they thought I should talk to.

The interviews were accompanied by observation of the work flow in the provision of different services that Infosys is involved in, sitting in on meetings and team discussions and attending press conferences, orientation and training sessions. I also made trips to the Infosys development centers (DCs) in two other Indian cities, Mysore and Chennai. The Mysore DC hosts Infosys' Global Education Center (GEC) which is the world's largest corporate training center where the company provides training for upto 4,500 trainees at a time. I had the chance to talk with entry-level trainees and also with their batch educators. In Chennai, I was able to spend time in Infosys BPO's call centers. Since I was embedded in the company while I was there, I was able to study HR policies and practices in some depth as a "participant observer", particularly the work design at the different services, recruitment, selection and training.

After coding my interview data, I discovered that I could empirically specify ideal profiles from within Infosys for three of my four subcontractor types. I concluded that Infosys Technologies Ltd. (the original IT services arm) represents an

ideal profile for Turn-key subcontractors, Infosys BPO (that engages in voice and non-voice operations) is an ideal profile for Economic subcontractors and Infosys Consulting Inc. (that engages in IT and business consulting) is an ideal profile for Sociotechnical subcontractors. In descriptions that follow, I discuss each of these ideal profiles and also present data on recruitment & selection, training and work design at each of them, in order to test the employment systems model presented in Section 4 of this paper.

Doty and Glick (1994) assert that tests of typological theories must simultaneously include the entire set of ideal types identified in the typology. When one or more of the ideal types in a theory are not included in the test of the theory, the analytical models used to test the theory will be misspecified. My empirical evidence suffers from this flaw as I fail to present an ideal profile for Agile subcontractors. Simultaneously, I do not present data on the appraisal and rewards aspect of employment systems across my ideal profiles due to lack of data. However, despite these shortcomings, I believe that my empirical work is a good start towards testing the typology presented in this paper, and can be supplemented by more rigorous testing in papers to come. I start out by presenting a brief history of Infosys to highlight its rapid growth since inception.

5.1 EVOLUTION OF INFOSYS

A team of seven software professionals, led by N. R. Narayana Murthy prompted Infosys Technologies Private Ltd (Infosys) in Mumbai, India, in 1981. The company began operations with just one customer on the books and an equity capital of Rs. 10,000 (then $320). The company shifted its registered office to Bangalore

(considered the Silicon Valley of India) in 1983, to tap the vast pool of talented engineers available in the city. The company was initially engaged in software development in the form of services, turnkey projects and products for the domestic and export market. The major focus initially was on the US market, given its size and the huge gap between the labor costs of US and that of Indian software professionals.

With prospects becoming brighter following the economic liberalization in India in 1991, the company started investing more on infrastructure and staff. In 1992, the company was converted into a Public Limited Company under the name Infosys Technologies Ltd. The following year, the company successfully completed its initial public offering (IPO) in India with a market capitalization of $10 million. A substantial part of the proceeds from the IPO was used to set up a new software development facility in the outskirts of Bangalore.

During the mid-1990s, Infosys faced competition from not only other Indian players such as Satyam Computers, Wipro, etc., but also from global players such as IBM, Sun Microsystems, etc. So, during 1995-99, Infosys started expanding to other markets and it set up development centers across cities in India and offices in Milton Keynes (UK), Toronto (Canada), Germany, Sweden, Belgium, and Australia and two development centers in the US. This expansion in turn resulted in an increase in revenues (from $26 million in 1996 to $120 million in 1999) and employees (from 1100+ in 1996 to 3500+ in 1999). In 1999, Infosys issued 2.07 million American Depository Shares (ADS) at $34 per ADS, and with the same, Infosys became the first Indian company to get listed on the NASDAQ.

During 2000-01, Infosys continued its globalization spree by opening marketing offices in France, Hong Kong, Argentina and UAE and development centers in Japan, Canada, UK and three more in the US. Revenues during 2001 were about Rs. 19,000 million ($400 million), which increased to about Rs. 26,000 million ($500 million) in 2002. In the same year, Infosys entered into a tie-up with Citigroup for the formation of Infosys BPO, a Business Process Management (BPM) company. In 2003, Infosys was ranked 74th among the World's top 100 best performing Infotech companies by Business Week. In 2004, Infosys incorporated a wholly-owned subsidiary in China, at Shanghai, with a capital outlay of $5 million. It also launched the US-based consulting unit, Infosys Consulting Inc. in April 2004. From the humble beginnings in 1981, the software company reached the billion dollar milestone with revenues of $1.06 billion and employee strength of 25,634 by 2004. Now, in the most recent fiscal year of 2007-2008, Infosys' revenue was $4 billion with a market capitalization of US$ 30 billion. Thus, it took Infosys 23 years since 1981 to earn its first million in revenue and then only 23 months to reach $2 million.

Now I shall look at Infosys Technologies Ltd, Infosys BPO and Infosys Consulting Inc. individually and discuss each of them along with their employment systems.

5.2 INFOSYS TECHNOLOGIES LTD.

Infosys Techologies is mainly engaged in software development, maintenance, re-engineering services and has some dedicated offshore software development centers for certain clients. Infosys has also developed and marketed certain company owned software products such as Finacle. The company is highly competent and provides its

services in a ready-to-use “turn-key” form by leveraging generalized process technology and not customizing much. For example, it develops standard software packages that can be applied to similar operations across an industry- one for the distribution industry, second for the transport industry and third for the warehousing industry. Infosys does all its projects on a full project management basis rather than subcontracting larger projects or only supplying manpower. This has proved to be valuable experience that has helped the company develop project management capabilities. Handling full life cycle projects gives higher margins and allows Infosys to work independently from its clients under modular value chain governance. In this way, Infosys Technologies Ltd. fits the description of a Turn-key subcontractor through its provision of highly specialized but not customized IT turn-key services in modular VCs.

Infosys’ clients are mainly from eight industries, namely; energy and utilities, engineering enterprises, financial services, technology, manufacturing, retail & distribution, telecom, and transportation, though they company has more than 20 industry verticals. The clients include Airbus, The Boeing Co., Microsoft, SCT Corporation, TIBCO, OnMobile, etc.

Infosys’ organization structure was simple and centralized in the early stages of development. By 2003, centralization of operations became difficult as the company planned to expand to other service lines. Inspired from GE’s model, Infosys decided to decentralize its operations and created small organizations within. The company had identified three tiers of leaders to articulate the founder’s vision and values to their teams and groups. The board members, including Murthy, formed the first tier, and they groomed the tier-2 leaders belonging to the world-wide customer

delivery, world-wide sales & proximity development centers (PDC), strategic groups & co-customer delivery, corporate marketing, education & research, etc. And, the integrated business units (IBUs) along the verticals and across the geographic zones made up the third tier. The IBUs have all the properties of the larger company, but are smaller in size making them more nimble. Examples of IBUs are Product Engineering (PED), Enterprise Solutions (ES), New Growth Engines (NGE) etc.

Employment System

The entry-level position at Infosys is that of a software engineer and a common pool of new recruits are hired each year for all IBUs together. This constitutes 75% of all new recruits in any given year. There are two channels for recruiting fresh software engineer recruits ("freshers") : the first is through campus placements (typically when candidates are still in their junior year) and the second is through the 'market', whereby recruitment advertisements are placed in leading newspapers across the country.

With respect to campus placements, the freshers have been traditionally recruited from engineering programs (any engineering major) or Masters of Science (MSc) programs in India from universities and colleges approved by the ACFE (Association of Certified Fraud Examiners). This pool of universities and colleges consists of 600 schools across the country. However, there is very stiff competition for these students, who form the core recruitment pool for all Indian IT subcontractors. Further, NASSCOM (the Indian IT industry association) predicts that demand for these workers will exceed supply by 70,000 in 2007-2008 and 235,000 by 2009-2010. As a result of these shortages in appropriately skilled labor, Infosys has been forced to also consider the pool of 3-year Bachelor of Science (BSc) graduates in Physics,

Chemistry or Mathematics for entry-level recruitment. The company believes that these students can be scaled up to software engineers through rigorous internal training. The main hindrance is the lack of 'industry-readiness' among many BSc graduates in India, who have poor communication and business skills. According to a Recruiting manager, only 40-50% of the total pool of BSc gradutes is industry-ready (Interview Jharna Thammaiah, Manager, Global Entry-level Recruitment).

Also in response to skills shortages, Infosys has begun hiring college graduates from the US and the UK for entry-level software engineer positions, through its 'Global Talent Program'. This pool is meant to staff the requirements of the local market ie. they get trained to become software engineers in India and then start working as entry-level software engineers in their home country. In 2006, Infosys went to 60 schools in the US. At the end of interviewing, 460 offers were extended out of which 126 students accepted. As expected, the conversion rate was significantly lower than the same in India. In India, the conversion rate (from job offer extension to offer acceptance) is 75 to 80% whereas in the US, it was 27%. In the UK, 12 schools were visited and 36 offers were made, out of which 30 students accepted, a surprisingly high conversion rate.

The selection process has two stages. The first stage consists of strict academic criteria (grade 10, grade 12 and undergraduate "marksheets") and performance on a logical reasoning test, which together determines whether a candidate makes it to the next stage of the selection process. Here, a behavioral interview is conducted in order to pick candidates who demonstrate 'learnability', in addition to other qualities like good communication, teamwork, analytical abilities, leadership potential and a practical and structured approach to problem solving. Infosys defines 'learnability' as

the ability to derive generic knowledge from specific experiences and apply the same in new situations. The interview panel consists of personnel from the HR department as well as technical managers. In 2005-2006, 6,800 offers were made in all, and in 2006-2007, 13,000 offers were made to keep up with demand (Interview Somnath Baishya, Head, Global Entry-level Recruitment).

All the freshers undergo a 6-month long entry-level training in Mysore (this training takes as long as 9 months to 1 year for BSc graduates). This entry-level training, which is conducted in Infosys' Global Education Center in Mysore, is called the "Foundation Program". The freshers have to successfully complete this training and pass the final exam before they can be deployed to specific IBUs. This guarantees that all employees, irrespective of their background, have a minimum level of technical competency. The motive of the training is to equip the employees to find the best possible solution in a given situation. For the first year after training, Indian BSc graduates are assigned to "lower hierarchy" projects that involve IT testing and maintenance in order for them to become completely comfortable with software programming, before moving on to projects in application development. The non-Indian recruits also go through the Foundation Program in Mysore. In fact, they spend an additional two months in India after their training gaining practical experience in the GDM by working for the Indian counterpart of the same IBU that they have been assigned to in their home country.

The training material has theory and application development elements to it, and also incorporates instruction in soft skills. Infosys has developed more than 240 courses including technical ones like e-commerce, database management and networking and non-technical ones like interpersonal skills and managerial skills. The

first half of the course is generic technical training while the second half is stream-specific training in a particular computer language. The exact proportion of freshers that undergo stream-specific training in Java or C++ or Fortran is determined by the Corporate Planning department based on their anticipation of future need. In this way, the training is a projection of the technology needs of the company. Many training modules incorporate team projects to prepare freshers for their future work environments and to hone their communication and team-playing skills. In 2005-06, the total training cost for Infosys for Rs. 6.7 billion (US$167 million), close to 6.5% of the company's annual revenue that year.

Work at Infosys is organized by project teams within IBUs. Note that IBUs are defined along industry verticals, and so every project team has an industry focus and also, utilizes a specific computer language (whatever is the protocol in that industry). A typical team is relatively flat and has three levels of hierarchy: Software Programmers, Programmer Analyst and Project Manager. The bulk of the team consists of entry-level Software Programmers who have undergone the appropriate stream-level training required for the project. The Programmer Analyst manages sub-teams in the project and focuses on technical issues, coding and configuration to ensure delivery of a module within the project. But the main responsibility for executing the whole project rests with the Project Manager, who must make sure that the project team delivers high-quality software to the customer on time and within cost. Because project managers have the main responsibility for satisfying the customer, they need to master not only executing the technical aspects of a project but also interacting with customers, eliciting requirements, managing the team, and so on. Thus, Infosys has implemented a variety of programs to help people transition from being engineers to being project leaders. Included in this is a five-day project

management course that focuses on all aspects of project management: planning, monitoring, controlling etc. The manager also plays the role of a mentor and uses his/her experience to guide other team members.

At Infosys, the set of activities executed by a project team is specified in the project management process. It is fairly standard, having three main stages: project planning, project execution and project closure. In the project planning stage, the project manager reviews contractual commitments and creates a plan to meet them. Creating a project plan involves defining a life-cycle process to be followed, estimating the effort and schedule, and preparing a detailed schedule of tasks. It also includes planning for quality and configuration management as well as risk management. The second phase, project execution, involves executing the project plan, tracking the status of the project, and making corrections whenever project performance strays from the path laid down in the project plan. This phase is the longest in the project management process, incorporating periodic tasks such as monitoring project status and quality and taking any needed corrective steps. The last stage of the project management process, project closure, involves a systematic wind-up of the project after customer acceptance. The main goal here is to learn from the experience so that the process can be improved.

In summary, Infosys Technologies Ltd. hires post-graduates and graduates for their technical competence, analytical skills and aptitude for learning and teamwork. It then trains these new hires themselves until they are experts in a particular computer language and can be placed in an IBU serving a specific industry. After this, they are deployed to project teams where they work with their team members towards meeting deadlines and cost and quality goals for their deliverable.

5.3 INFOSYS BPO

Infosys initially ventured into Business Process Outsourcing in 2002 as it represented the next generation in the evolution of Information Systems. BPO was a growing technological trend in the area of business process automation and system design. It had helped organizations to formalize specifications of business processes and enabled their analysis, monitoring and execution. Infosys' business processes service, now called Infosys BPO (intially under the name 'Progeon') aimed to tap the growing market segment of the IT-enabled services. Infosys had a tie-up with Citigroup for the formation of Infosys BPO, with Citibank's investment of $20 million in 2002. Infosys BPO was started to concentrate on financial service industries under captive value chains. It sought to leverage the benefits of service delivery, globalization and to derive efficiency and cost effectiveness in customer business processes. The work is inherently of low specialization and low customization, and one of the main reasons why BPO took off in a big way was the savings in labor costs from performing the work in developing countries. In this way, Infosys BPO fits the description of an economic subcontractor.

In the first five years since inception, Infosys BPO had seen a strong growth in revenues to $103.44 million in the quarter ending December 2006 (the BPO services constituted around 2% of Infosys' consolidated revenues). In all, Infosys BPO had 35 customers as of July 2007 with employee strength of 10,351. Infosys BPO has centers in Bangalore, Pune, Jaipur and Delhi in India and also a fully-owned subsidiary in the Czech Republic to cater to the clients in various European languages. Infosys BPO consciously decided to limit its voice-related business at 30% (which accounted for

14% of its offering in 2004). Infosys BPO wanted to strike deals that required more of process re-engineering rather than mere servicing of processes. It aligned its offerings with Infosys' existing vertical expertise - banking and finance, insurance, security and telecom, making it easier to go after Infosys' clients. Infosys BPO thus became a value addition to the services provided by Infosys to its clients. Some of Infosys BPO's clients include British Telecom, Nextel Partners Inc., GreenPoint Mortgage, etc.

Employment System

Given the rapid growth at Infosys BPO, recruitment is considered to be a strategic function simply to keep up with labor demand, and for this reason, Infosys hires year-round. They mostly hire college graduates (of any background) with a BA or BCom, but now they are starting to consider high school graduates too. Campus hiring is the most common channel for recruitment. Initially, only college campuses in the metropolitan cities of India were visited, but now that Infosys BPO is hiring in larger numbers, they have moved to interior cities as well. In fact, the cost of increasing the pool of applicants (advertising, travel to other cities and campuses) has increased by, some say over 25% between 2004 and 2006.

The selection process consists of only a walk-in interview where anyone who thinks that they might fit the job description can bring copies of their "marksheets" (grade 10, 12 and undergrad) and request to be interviewed. During the interview, the recruiting manager assesses the candidates' level of commitment and sincerity towards the job, given already high turnover rates among entry-level employees and high initial training costs incurred by the company which makes turnover expensive. They also test candidates' ability to communicate in English, though minor shortcomings in this regard can be overcome during training. Employees who are flexible to work the

night shift have an added advantage. In general though, the selection process is gentle and most employees who have a working knowledge of English and seem reasonable are offered jobs without much effort.

Once employees are hired, all of them undergo training that lasts between 2-3 months. There are three types of training. The first type of training includes communication, grammar, vocabulary, speech pronunciation, and "accent neutralization". The objective of such training is to ensure that communication is "free of first language influence that impedes comprehension, often referred to as 'Indianisms' in industry parlance" (Ramachandran 2006, pp 1). To quote a training manager "the industry uses standard formats when it comes to modules on accent and culture training." The new hires that are not assigned to voice-based operations don't talk to customers on a daily basis, but still undergo this training so that can communicate with Infosys BPO's clients, when needed.

The second type of training deals with technical and project specific skills. This training is particular to the specific project or industry that the employee is associated with (e.g., financial products). The final type of training is specific to voice-based employees and involves some weeks of training in the culture of the client's country (loosely defined and focused on certain icons such as baseball), a number of "voice skills" (the ability of call center agents to build rapport by using appropriate tone, understand the problem of the customer and listen attentively) and comprehension skills (employees are trained in understanding the customer's query, in being able to provide an appropriate solution, and in understanding different U.S. accents). Both these components, according to a communications coach within the

BPO, “helps call center agents ‘zap the gap’ and earn credibility” (Ramachandran 2006, pp 1).

In 2005, Infosys BPO launched Project Genesis with the objective of equipping the teaching fraternity in B and C towns of Karnataka with knowledge of the BPO industry and skill sets required to succeed in a BPO career. The objective was to create a workshop that would give students a perspective of careers in the BPO industry and also equip them with the skills required for this industry so that the training demands and costs placed in BPO companies are reduced. In the first year, over 6,000 students were trained under the ‘Global Skills Enhancement Curriculum” and the initiative was successful in placing over 800 of them in various BPO companies. Today over 15,000 students are being trained under the initiative and it has moved to cover the states of Rajasthan and Maharashtra as well. This has created a talent pool that was hitherto not accessible to any company in the BPO industry.

The design of work at Infosys BPO is individually focused. The firm has 5 industry verticals - retail, high technology, banking and capital markets, insurance and communication – and 6 horizontals indicating the nature of the work, namely – finance and administration, human resources, customer service, knowledge processing, procurement and industry solutions. Every employee is assigned to a specific client project, which is a combination of a horizontal and a vertical. In April 2005, Infosys BPO introduced a role-based structure that focused and recognized the role that each employee plays, along with his/her competencies, rather than the designation he/she carries and the compensation he/she receives. This competency-based approach changed the emphasis of training to one of acquiring competences for

specific role. This structure also helps Infosys BPO establish a robust framework for employee progression and promotions.

In summary, Infosys BPO hires colleges and high school graduates who can speak English and seem sincere about the job. These new hires go through training in soft skills and project oriented skills (there is an additional component for voice-based employees) and are then assigned to specific projects. However, the work is organized individually and individual roles and competencies are emphasized.

5.4 INFOSYS CONSULTING INC.

In 1999, Infosys started thinking about business consulting services. Generally, consultancy firms were either competent in business strategies or were technological experts. Both separately had their own merits. So, Infosys tapped this opportunity to start an IT and business consulting services in 2004 that focused on defining, optimizing and aligning a clients' business strategy with IT initiatives. Thus, it intended to combine world-class consulting with the excellence and cost competitiveness of its GDM. Specifically, Infosys' Value Realization Methodology (VRM) is designed to help businesses understand the value of IT and business process improvement initiatives before they implement changes. The company introduced a host of new services to the traditional consulting mix: upfront competitive edge assessments, proprietary industry analyses, and projects structured around beating competition. The areas of operation for Infosys Consulting initially focused on telecom, banking and financial sectors, and in-house manpower consulting. The major clients at this time included Transportation.com (an affiliate of Yellow Corporation),

American Century Services, Cisco Systems, Johnson Controls, Toshiba America Electronic Components Inc., etc.

Now the company has built rigorous linkages to maintaining client value and has pooled in the best brains from the Big Five consultancies in the business. These are multi-skilled workers capable of handling the high specialization, especially with respect to IT skills, and high customization projects assigned to them. The consulting subsidiary started with a workforce of 75, which increased to 500 professionals in the next three years (2005-2008). In 2007, Infosys Consulting made $3.9 billion in revenue, thus capturing 3% of Infosys' revenue. The company is of the opinion that the consulting segment will not only help in getting higher billing rates but also give an opportunity to work far more closely with the top management of client companies. This is important in forging long-term relationships, characteristic of the relational value chains in which consulting firms operate. Infosys Consulting is thus an ideal profile for Sociotechnical Subcontractors.

Employment System

Infosys Consulting hires only the top 10 percent of talent, as a strict policy. Mr. Murthy explains the rationale as the following: "You have to hire A players. If you hire B players, they will hire C players, and the C players will hire D players, and pretty soon you have a bunch of idiots running the company." The founders of Infosys Consulting considered carefully the kind of culture they wanted to create, before they started recruiting. First, they wanted to eradicate the arrogance that had become pervasive among consultants in the late 1990s and replace it with Infosys's values, among them integrity, fairness, egalitarianism, a commitment to learning, and, in starkest contrast to the typical consulting firm of years past, humility. The strongest

value within Infosys was commitment to client service. To reinforce this value, Mr. Pratt (the company's first CEO) instituted a practice of tying each consultant's compensation to client evaluations of the consultant's performance.

While adopting these foundational values, the founding leaders also recognized that they would have to differentiate Infosys Consulting from their parent company if they wanted to attract top talent. Infosys Consulting would need a distinct brand identity and different compensation norms. Its work would have to be perceived more as "art," distinct from Infosys's work as "science." Top consultants would not be attracted easily to an upstart consulting division within a massive IT services firm.

Nonetheless, Mr. Pratt and his colleagues put together a team, primarily by attracting experienced, multi-skilled consultants from rival firms. Infosys Consulting strived to get a set of consultants who have good strategic perspectives and good implementation skills so that they can work closely with clients to tailor the consulting services. Early hire Ming Tsai, for example, was the former head of IBM's global retail practice. The team continued making experienced hires until they had recruited many practice leaders in the field. Infosys Technologies CEO Nandan Nilekani described his perspective on the Infosys Consulting team: "We decided to launch Infosys Consulting in order to expand our capabilities so that we could solve client problems at a more strategic level. So, we hired a top management team, one made up of top partners with deep experience. Then we let them do the rest, and they have proven able to attract even more great talent." More than 70% have MBAs from US and European schools, which provides a better grounding for consultancy work than the more technical and engineering skills found in graduates from Indian schools.

They also have significant and vital varied work experience, and networks in the business world.

The selection process for these consultants consists of 3 rounds of back-to-back interviews with panels of both senior leaders as well as other consultants at Infosys BPO. These interviews test competence through case study questions and logic puzzles, and test fit with the company through strategic fit and interpersonal questions. Candidates are hired only if all the consultants involved in the hiring process give their approval, as work here is organized in the form of autonomous work groups where consultants will be working very closely with each other (without a team leader) to provide solutions to their clients.

Infosys Consulting also sources talent through an Infosys wide internship program called InStep. The top 10% of business schools are chosen from the regions where Infosys has a business presence, and as Infosys expands into new regions, top schools there are identified and interns picked from these schools. In 2006-2007, 84 top institutions worldwide were visited out of which 39 schools were US schools since 65% of the company's business comes from the US. The program targeted universities in geographies like Spain, Italy, Denmark, Norway, Chile, Colombia and Israel for the first time given their expanded business presence in these countries. In total, interns of 30 nationalities were hired. The program is selective though and only considers students with a GPA of 3.6 or higher.

The goal is to offer "live work" to experienced, multiskilled students from top academic institutions and test whether they fit with the company culture and have the right interpersonal skills needed for the job. InStep gives importance to finding a good

project-student match for the MBA interns so that Infosys Consulting benefits from the fresh perspective, the interns enjoy the work and the possibility of absorbing the intern is adequately assessed to make a decision. The number of MBA interns finally absorbed into the company, though small, are rising. In 2006-07, 11 job offers were made, all of which were accepted.

Newly hired consultants don't require any entry-level training given their extensive harem of skills and prior work experience. However, Infosys Consulting continuously invests in the best-in-class infrastructure and training typically accompanies any such upgrades, so that employees always provide the highest quality services to their clients. These investments enhance employee productivity and reduce engagement risk for clients.

At Infosys Consulting, work is structured in cross-functional teams. The company believes that well-managed, diverse work teams can outperform homogeneous teams in quantity, creativity and quality; that complex problems are better solved by cross-functional teams typical of matrix organizations, and that people who work, live and learn in integrated settings develop stronger interpersonal, communication and negotiating skills. The consultants at Infosys Consulting are typically multi-skilled and have more than one area of functional expertise. Therefore, teams are organized such that each functional area (marketing, finance, accounting, IT etc.) is represented by at least two people within a team (Interview Bela Gupta, Executive, Corporate Planning).

In summary, Infosys Consulting hires multiskilled and highly experienced workers, who fit the organizational culture and also, have good interpersonal skills

Table 3: Empirical Evidence

Complexity of product/service

TURN-KEY Subcontractors ***Employment Systems*** Recruitment & Selection: college graduate with specialized degree, testing to assess technical competence Skills & Training: functionally oriented, entry-level technical training, management training when promoted Work Design: project based teams, relatively flat with 2-3 levels of hierarchy and bulk of workers being entry-level specialists Appraisal & Rewards: based on team leader evaluation, includes base salary, individual and team bonus, promotion opportunities ~~~~~~ ***Infosys Technologies Ltd.*** Recruitment & Selection: BTech or BSc graduates, Selection Round 1: marksheets (grade 10, 12 and undergrad) and logical reasoning test; Round 2: behavioral interview identifying 'learnability' Skills & Training: mandatory 4-6 month long "Foundation Program" consisting of 1)generic technical training and 2)IT stream-specific training; employees are required to pass an exam displaying mastery of these technical skills; project manager training Work Design: project teams carved by a)industry vertical (banking,aerospace etc) and b)IT stream (Java, C++ etc)	**CLIENT-SPECIFIC Subcontractors** ***Employment Systems*** Recruitment & Selection: postgraduate/ doctorate degree and/or significant varied work experience, individual and group-based technical and personality testing Skills & Training: multi-skilled oriented, high breadth of understanding across functions and high knowledge depth in a couple, continuous training in order to stay flexible Work Design: autonomous cross-functional teams Appraisal & Rewards: based on client feedback and ability to maintain relationship with client, includes base salary, large individual and team bonuses ~~~~~~ ***Infosys Consulting Incorp.*** Recruitment & Selection: top 10% of talent from other consulting firms and industry (who are multi-skilled industry experts and graduates from top American/European MBA schools); 3 rounds of interviews with interpersonal, strategic fit and case study questions; also through internship program Skills & Training: no entry-level training but regular continuous training opportunities through workshops Work Design: location-based independent teams such that each member of the team brings some functional expertise (finance, marketing etc), any team responsible for one client at a time
ECONOMIC Subcontractors ***Employment Systems*** Recruitment & Selection: high school graduates, low barriers to entry during selection Skills & Training: project-specific, entry-level training in project domain and soft skills Work Design: individual with electronic surveillance and supervisors monitoring work Appraisal & Rewards: quantitative appraisal based on productivity, base salary, pay for individual performance ~~~~~~ ***Infosys BPO*** Recruitment & Selection: "+2" and/or college graduates through campus hiring, interview assessing commitment to job and English speaking skills Skills & Training: mandatory training in soft skills and project domain (vertical and horizontal) lasting 2-3 months or until fully comfortable with project tasks Work Design: individual-based, assigned an industry vertical (high tech, finance etc) and a horizontal (HRO, F&A etc), high levels of monitoring	**AGILE Subcontractors** ***Employment Systems*** Recruitment & Selection: university graduates of any background, selection though interview on the basis of aptitude for learning and problem solving Skills & Training: generalist oriented, problem solving and analytical skills, high breadth of understanding across functions to allow flexibility, low depth of knowledge, entry-level training in project domain and soft skills, continuous training for flexibility Work Design: highly flexible teams Appraisal & Rewards: based on client feedback, base salary, team bonus, advanced educational opportunities ~~~~~~

Volatility of Demand

that allow them to work in teams and interact closely with clients to customize their services. These workers have no specific entry-level training, but have plenty of continuous training opportunities to keep up with developments in technology and management practices. They are organized into autonomous teams to serve specific clients, such that cumulatively, they bring a wide range of functional expertise to the table.

A summary of the employment systems at Infosys Technologies Ltd., Infosys BPO and Infosys Consulting Inc. is presented above in Table 3 on the previous page, along with the original descriptions of the predicted employment systems to highlight how well evidence from my ideal profiles validates my employment systems framework.

CHAPTER 6

CONCLUSION

In this paper, I have developed a typology of first-tier subcontractors in value chains using three first-order constructs, namely level of specialization, level of customization and value chain governance. My typology defines four subcontractor ideal types- Economic, Agile, Turn-key and Client-Specific subcontractors- each of which are unique configurations of the first-order constructs. Then I have articulated expected employment systems at each of the subcontractor types, specifically looking at recruitment & selection, skills & training, work design and appraisal & rewards. Finally, I find ideal profiles of Turnkey, Economic and Client-Specific subcontractors in Infosys Technologies Ltd, Infosys BPO and Infosys Consulting Inc. and describe these companies as well as their employment systems as empirical evidence for my argument.

My first goal from this paper was to reduce the gap between the common perception of subcontractors and their actual nature and illustrate the diversity amongst subcontractors with respect to their capabilities and leverage within their respective value chains. I have accomplished this through my typology, which argues that subcontractors will compete on various dimensions such as costs, flexibility, quality, technical infrastructure, independence and skills and will focus on specialization and customization to varying degrees in the provision of their services. They will also have very different relationships with their clients or lead firms based on their competence and the role that they play in their value chains.

My second goal was to articulate a framework for employment among subcontractors in global value chains and in the process, highlight that the choice of employment system in an organization is path dependent in that it will be impelled by the specifics of the value chain in which the subcontractor operates. I look at my subcontractor ideal types and argue that each of their employment systems will be distinctive, suggesting that the external roles that each one of them plays from a value chain perspective, will have an impact on their organization of employment internally. Specifically, I compare practices related to recruitment & selection, skills & training, work design and appraisal & rewards within Economic, Agile, Turn-key and Client-Specific subcontractors in making my case.

I present evidence for this paper in the form of empirically specified ideal profiles, which closely resemble the subcontractor ideal types identified in my typological theory. Infosys Technologies Ltd. is an ideal profile for Turn-key subcontractors, Infosys BPO is an ideal profile for Economic subcontractors and Infosys Consulting Inc. is an ideal profile for Client-Specific subcontractors. Then I outline the employment systems at each of these ideal profiles and verify that they match what I predict in my employment systems framework, shown in Table 2.

Future research needs to engage in more rigorous testing of my typological theory, ideal types and corresponding employment systems. This can be best achieved through quantitative modeling of the ideal types, followed by statistical tests of "profile similarity" assessing the similarly of real organizations to ideal types. More empirical work would also be useful in advancing my preliminary typology by adding more detail and nuance to the argument. Case studies of employment systems amongst first-tier subcontractors would be particularly useful in presenting a more

comprehensive description of employment within these subcontractors, going beyond HR practices to HR policies and philosophies. Finally, more work that engages with the HR and GVC literatures in conjunction would add value and depth to research in both the disciplines.

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